ABSTRACT

THE VALUE OF ISLANDS AS INDICATORS OF EVOLUTION: THE GRASSHOPPERS OF THE CALIFORNIA CHANNEL ISLANDS

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Twelve of 54 Orthoptera species (22.2 o/o) found on the eight California Channel Islands off the coast of southern California are endemic, 11.9 o/o in the northern four-island group and 22.2 o/o in the southern four-island group.

A general analysis of the distribution of these endemics, especially those in the cricket genus *Cnemotettix* and those endemic species capable of flight, was conducted.

The results indicate that autochthonous speciation, and not the occurrence of mainland relicts, explains these high endemic numbers. A regression analysis of long island area versus long number of Orthoptera species yields results similar to those of other animal and plant species. Faunistically rich land masses that lie within 20 km of one Channel Island are disproportionately more important as source areas than those land masses whose distances exceed 20 km.

Simple regression of enviromental components correlated with faunal diversity shows that for untransformed data, orthopteran species numbers are significantly explained by area (82 o/o) and elevation (74 o/o). For long transformed data, the significance of area explaining orthopteran species number is diminished to 57 o/o, while elevation explains 78 o/o which is almost unchanged from before transformation.